

Contents

<i>Editorial</i>	iii
<i>Session Chairs</i>	v
<i>Contents</i>	vii
SECTION 1: PATHOLOGY AND CARCINOGENESIS	
Phenotypically Altered Hepatocyte Populations in Diethylnitrosamine-Induced Medaka Liver Carcinogenesis: Resistance, Growth, and Fate DAVID E. HINTON, SWEE J. TEH, MARK S. OKIHIRO, JANIS B. COOKE & LYNN M. PARKER (USA)	1
Magnetic Resonance Detection of Environmentally Induced Hepatic Lesions in <i>Fundulus heteroclitus</i> GEORGE GASSNER, WOLFGANG VOGELBEIN & MICHAEL LINE (USA)	7
Bromodeoxyuridine Uptake in Hydropic Vacuolation and Neoplasms in Winter Flounder Liver MICHAEL J. MOORE & JOHN J. STEGEMAN (USA)	13
Elevated Ornithine Decarboxylase Activity in Winter Flounder Livers Exhibiting Cellular Lesions ROBERT A. KOZA, MICHAEL J. MOORE & JOHN J. STEGEMAN (USA)	19
Pollutant-Induced Cell Injury in Fish Liver: Use of Fluorescent Molecular Probes in Live Hepatocytes MICHAEL N. MOORE (UK)	25

Detection of <i>ras</i> Oncoprotein in Liver Cells of Flatfish (Dab) from a Contaminated Site in the North Sea	33
MICHAEL N. MOORE & BARRY EVANS (UK)	
Histopathological Changes in the Liver of Dab (<i>Limanda limanda</i>) from a Contamination Gradient in the North Sea	39
MICHAEL G. SIMPSON (UK)	
Hepatic Lesions Other than Neoplasms in Subadult Flatfish from Puget Sound, Washington: Relationships with Indices of Contaminant Exposure	45
MARK S. MYERS, O. PAUL OLSON, LYNDAL L. JOHNSON, CARLA S. STEHR, TOM HOM & USHA VARANASI (USA)	
Chromatophoromas and Related Hyperplastic Lesions in Pacific Rockfish (<i>Sebastes</i> spp.)	53
M. S. OKIHIRO, J. A. WHIPPLE, J. M. GROFF & D. E. HINTON (USA)	
Chemical Induction of Tumours in Oysters by a Mixture of Aromatic and Chlorinated Hydrocarbons, Amines and Metals	59
GEORGE R. GARDNER, RICHARD J. PRUELL & A. RUSSELL MALCOLM (USA)	
Histopathological Alterations in <i>Mya arenaria</i> Following a #2 Fuel Oil Spill in the Arthur Kill, Elizabeth, New Jersey	65
R. P. BROWN, A. CRISTINI & K. R. COOPER (USA)	
Lectin Binding Sites in the Digestive Gland of Mussel	69
JOANNE M. THORNDIKE, P. H. BACH & M. N. MOORE (UK)	
Age-Related Differences in the Recovery of Lysosomes from Stress-Induced Pathological Reactions in Marine Mussels	75
LISA M. HOLE, MICHAEL N. MOORE & DENIS BELLAMY (UK)	
Studies of a Fatal Pollutant-Induced Hyperbilirubinaemia in Spawning Atlantic Salmon	81
STEPHEN G. GEORGE (UK), D. GROMAN (Canada), S. BROWN & K. HOLMES (UK)	

SECTION 2: CYTOCHROME P450 REGULATION

The Ah Receptor in Marine Animals: Phylogenetic Distribution and Relationship to Cytochrome P4501A Inducibility	87
MARK E. HAHN, ALAN POLAND, ED GLOVER & JOHN J. STEGEMAN (USA)	
Potentiation of BNF Induction of Cytochrome P4501A1 by Glucocorticoids in Primary Culture of Rainbow Trout Hepatocytes	93
ALAIN DEVAUX (France), MAIJA PESONEN (Sweden), GILLES MONOD (France) & TOMMY ANDERSSON (Sweden)	
Endogenously-Mediated, Pretranslational Suppression of Cytochrome P4501A in PCB-Contaminated Flounder	97
ADRIA A. ELSKUS, RICHARD PRUELL & JOHN J. STEGEMAN (USA)	
Effects of Prior Exposure History on Cytochrome P4501A mRNA Induction by PCB Congener 77 in Atlantic Tomcod	103
ISAAC I. WIRGIN, GUAT-LIAN KREAMER, CHERYL GRUNWALD, KATHERINE SQUIBB, SEYMOUR J. GARTE (USA) & SIMON COURTENAY (Canada)	
Purification, Characterization and Regulation of a Male-Specific Cytochrome P450 in the Rainbow Trout Kidney	109
TOMMY ANDERSSON (Sweden)	
Cytochrome P450 in Seals: Monooxygenase Activities, Immunological Cross-Reactions and Response to Phenobarbital Treatment	113
ANDERS GOKSØYR, JONNY BEYER, HÅVARD E. LARSEN (Norway), TOMMY ANDERSSON & LARS FÖRLIN (Sweden)	
Immunocytochemical Localization of Cytochrome P4501A1 in Liver of Rainbow Trout (<i>Oncorhynchus mykiss</i>)	117
SUSAN M. LESTER (USA), THOMAS A. BRAUNBECK (Germany), SWEE J. TEH, JOHN J. STEGEMAN, MICHAEL R. MILLER & DAVID E. HINTON (USA)	
Quantification of Cytochrome P4501A1 and Catalytic Activities in Liver Microsomes of Isosafrol- and β -Naphthoflavone-treated Rainbow Trout (<i>Oncorhynchus mykiss</i>)	123
MALIN CELANDER & LARS FÖRLIN (Sweden)	

Influence of Dietary PUFA Content on Cytochrome P450 and Transferase Activities in Atlantic Salmon (<i>Salmo salar</i>)	127
STEPHEN GEORGE & JAMES HENDERSON (UK)	
SECTION 3: ENVIRONMENTAL MONITORING WITH CYTOCHROME P450	
Nomenclature for Hydrocarbon-Inducible Cytochrome P450 in Fish	133
JOHN J. STEGEMAN (USA)	
CYP1A1 Protein and mRNA in Teleosts as an Environmental Bioindicator: Laboratory and Environmental Studies	139
MARY L. HAASCH, ELLEN M. QUARDOKUS, LESLIE A. SUTHERLAND, MARK S. GOODRICH, RUTH PRINCE, KEITH R. COOPER & JOHN J. LECH (USA)	
The Cytochrome P450 1A1 Response in Fish: Application of Immunodetection in Environmental Monitoring and Toxicological Testing	147
ANDERS GOKSØYR & ASTRID-METTE HUSØY (Norway)	
The Utilization of Cytochrome P4501A mRNA in <i>Limanda limanda</i> (Dab) as a Monitor of Chemical Exposure in the North Sea	151
KENNETH W. RENTON & RICHARD F. ADDISON (Canada)	
Unbleached Pulp Mill Effluents Affect Cytochrome P450 Monooxygenase Enzyme Activities	157
PIRJO LINDSTRÖM-SEPPÄ, SIRPA HUUSKONEN, MAIJA PESONEN, PAULA MUONA & OSMO HÄNNINEN (Finland)	
Bioindicator Field Monitoring: Use of Fish Biochemical Parameters at a Modern Bleached Kraft Pulp Mill Site	163
PAMELA KLOEPPE-RAMS (USA) & STELLA SWANSON (Canada)	
Biotransformation Enzyme Activities and PCDD/PCDF Levels in Pike Caught in a Swedish Lake	169
LARS FÖRLIN, LENNART BALK, MALIN CELANDER, STURE BERGEK, MARIA HJELT, CHRISTOFFER RAPPE, CYNTHIA DE WIT & BO JANSSON (Sweden)	
Applications of Hepatic Mixed Function Oxidase Enzyme Activities to Northern Freshwater Fish: I. Burbot, <i>Lota lota</i>	175
W. L. LOCKHART & D. A. METNER (Canada)	

The Use of Polyclonal Antibodies Raised against Rat and Trout Cytochrome P450 CYP1A1 Orthologues to Monitor Environmental Induction in the Channel Catfish (<i>Ictalurus punctatus</i>)	181
M. J. J. RONIS (USA), MALIN CELANDER, LARS FÖRLIN (Sweden) & THOMAS M. BADGER (USA)	
Hepatic EROD Activity in Spot, <i>Leiostomus xanthurus</i> , Exposed to Creosote-Contaminated Sediments	189
DANIEL W. SVED, PETER A. VAN VELD & MORRIS H. ROBERTS, JR (USA)	
Using Cytochrome P450 to Monitor the Aquatic Environment: Initial Results from Regional and National Surveys	195
TRACY K. COLLIER, S. DENISE CONNOR, BICH-THUY L. EBERHART, BERNADITA F. ANULACION (USA), ANDERS GOKSØYR (Norway) & USHA VARANASI (USA)	
Mixed Function Oxidase Activity and Chlorinated Hydrocarbon Residues in Antarctic Sea Birds: South Polar Skua (<i>Catharacta maccormicki</i>) and Adélie Penguin (<i>Pygoscelis adeliae</i>)	201
SILVANO FOCARDI, M. C. FOSSI, C. LEONZIO, L. LARI, L. MARSILI (Italy), G. S. COURT & L. S. DAVIS (New Zealand)	
The Effect of 3,3',4,4'-Tetrachlorobiphenyl and Clophen A50 on the Hepatic Monooxygenase System of Eider Ducklings (<i>Somateria mollissima</i>) with Indications for Structure-Related Biotransformation of CB Congeners	207
M. J. C. ROZEMEIJER, J. P. BOON, P. DUIVEN, J. VAN DER MEER, J. S. J. VAN DE SANT, C. SWENNEN, A. J. MURK, J. H. J. VAN DEN BERG, M. FELLINGER, A. BROUWER & J. H. KOEMAN (The Netherlands)	
Effects of 2,3,7,8-TCDD and Contaminated Sediment on the Cytochrome P4501A Orthologue in Rainbow Trout (<i>Oncorhynchus mykiss</i>) and Carp (<i>Cyprinus Carpio</i>), Using Catalytic and Immunochemical Techniques	215
MARTINE E. J. VAN DER WEIDEN (The Netherlands), MALIN CELANDER (Sweden), WILLEM SEINEN, MARTIN VAN DEN BERG (The Netherlands), ANDERS GOKSØYR (NORWAY) & LARS FÖRLIN (Sweden)	

SECTION 4: PHASE II METABOLISM

Glutathione-Mediated Chlorothalonil Detoxification in Channel Catfish Gills	221
EVAN P. GALLAGHER & RICHARD T. DI GIULIO (<i>USA</i>)	
The Effect of β -Naphthoflavone and Phenobarbital on UDP Glucuronosyltransferase in King Salmon (<i>Oncorhynchus tshawytscha</i>)	227
REESE A. BOLINGER & JOHN M. KENNISH (<i>USA</i>)	
Regulation of Hepatic Glutathione S-Transferase Expression in Flounder	233
KAREN SCOTT, MICHAEL J. LEAVER & STEPHEN G. GEORGE (<i>UK</i>)	
Expression and Tissue Distribution of Plaice Glutathione S-Transferase A	237
MICHAEL J. LEAVER, KAREN SCOTT & STEPHEN G. GEORGE (<i>UK</i>)	
Glutathione S-Transferase from an Antarctic Fish, <i>Dissostichus mawsoni</i>	243
K. CAMERON FALKNER & ALAN G. CLARK (<i>New Zealand</i>)	

SECTION 5: BIOTRANSFORMATION, PHARMACOKINETICS AND TOXICITY

The Multidrug Resistance-Like Mechanism in the Marine Sponge <i>Tethya aurantium</i>	249
BRANKO KURELEC & BRANKA PIVČEVIĆ (<i>Croatia</i>)	
Disposition and Metabolism of 2,3,7,8-Tetrachlorodibenzofuran (TCDF) in Rainbow Trout	255
ROBERT MASLANKA, A. RUTH STEWARD, JYOTSNA PANEREKAR, SUBODH KUMAR & HARISH C. SIKKA (<i>USA</i>)	
Metabolic Alterations of PCB Residues in Aquatic Fauna: Distributions of Cytochrome P4501A1- and P4502B-Like Activities	261
JOHN F. BROWN JR (<i>USA</i>)	

Indications of P450 Monooxygenase Activities in Beluga (<i>Delphinapterus leucas</i>) and Narwhal (<i>Monodon monoceros</i>) from Patterns of PCB, PCDD and PCDF Accumulation	267
R. J. NORSTROM, D. C. G. MUIR, C. A. FORD, M. SIMON, C. R. MACDONALD & P. BÉLAND (Canada)	
Microsomal Activation of Benzo[a]pyrene to Mutagens by <i>Alligator mississippiensis</i> In Vitro: Induction by 3-Methyl-cholanthrene	273
MILES A. KIRCHIN & GARY W. WINSTON (USA)	
In-Vitro Metabolism of Benzo[a]pyrene and Benzo[a]pyrene-7,8-Dihydrodiol by Liver and Intestinal Mucosa Homogenates from the Winter Flounder (<i>Pseudopleuronectes americanus</i>)	279
ANNE E. McELROY & KEVIN M. KLEINOW (USA)	
Xenobiotic Metabolizing Enzyme Activity in the Liver and Kidney of the Brown Bullhead (<i>Ictalurus nebulosus</i>)	287
JYOTSNA PANGREKAR & HARISH C. SIKKA (USA)	
Xenobiotic Metabolizing Enzyme Activity in Sockeye Salmon (<i>Oncorhynchus nerka</i>) during Spawning Migration	293
JOHN M. KENNISH, REESE A. BOLINGER, KENT A. CHAMBERS & MELINDA L. RUSSELL (USA)	
Dose- and Time-Dependent Formation of Benzo[a]pyrene Metabolite DNA Adducts in the Spiny Lobster, <i>Panulirus argus</i>	299
MARGARET O. JAMES, ALLEN H. ALTMAN, CHUNG-LI J. LI & SEAN M. BOYLE (USA)	
Metabolism and Mutagenicity of 4-Nitroquinoline N-Oxide by Microsomes and Cytosol of Digestive Gland of the Mussel <i>Mytilus edulis</i> L.	303
PAZ GARCIA-MARTINEZ (Spain), ANTAL K. D. HAJOS (USA), DAVID R. LIVINGSTONE (UK) & GARY W. WINSTON (USA)	
Further Characterization of Benzo[a]pyrene Metabolism in the Sea Star, <i>Asterias rubens</i> L.	309
PIETER J. DEN BESTEN (The Netherlands), SEAN C. M. O'HARA & DAVID R. LIVINGSTONE (UK)	
The Role of Oxyradicals in Intracellular Proteolysis and Toxicity in Mussels	315
MILES A. KIRCHIN, MICHAEL N. MOORE, ROGER T. DEAN (UK) & GARY W. WINSTON (USA)	

A Physiologically Based Pharmacokinetic Model for <i>Mya arenaria</i> M. D. MORENO, K. R. COOPER, R. P. BROWN & P. GEORGOPoulos (USA)	321
Effects of Organic Toxicants on the Anoxic Energy Metabolism of the Mussel <i>Mytilus edulis</i> W. X. WANG, J. WIDDOWS (UK) & D. S. PAGE (USA)	327
Polynuclear Aromatic Hydrocarbons and Fish Lens Cataract: Effects of Benzo[a]pyrene-7,8-Dihydrodiol on the Macro- molecular Synthesis of Cultured Eye Cells CHRISTOPHER D. WILLIAMS, MOHAMED FAISAL & ROBERT J. HUGGETT (USA)	333
Requirement of Endogenous Iron for Cytotoxicity Caused by Hydrogen Peroxide in <i>Euglena gracilis</i> KIMMETTE RADTKE, ROBERT W. BYRNES, PAMELA KERRIGAN, WILLIAM E. ANTHOLINE & DAVID H. PETERING (USA)	339
A Model for the Cytotoxic Effects of Amphiphilic Chemicals in Marine Organisms Using 3T3-Cells JOANNE M. THORNDIKE, P. H. BACH & M. N. MOORE (UK)	345
7-Ethylresorufin O-Deethylase Activity and Level of DNA- Adducts in Trout Treated with Benzo(a)pyrene JEAN-FRANÇOIS MASFARAUD, ANNIE PFOHL-LESZKOWIC, CHRISTIAN MALAVEILLE, GÉRARD KEITH & GILLES MONOD (France)	351

